DOCUMENT RESUME

ED 226 297 CG 016 490

AUTHOR Breckler, Steven J.; Greenwald, Anthony G.
TITLE Charting Coordinates for the Self-Concept in Multidimensional Trait Space.
PUB DATE Aug 82
NOTE 12p.; Paper presented at the Annual Convention of the American Psychological Association (90th, Washington, DC, August 23-27, 1982).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS College Students; Evaluation Methods; Higher Education; *Individual Differences; *Personality Measures; Personality Traits; *Self Concept; *Self Evaluation (Individuals); Test Construction; Test Validity
IDENTIFIERS Individual Differences Scaling (INDSCAL); Unfolding Technique

ABSTRACT

The traditional method of measuring self-esteem has been to construct instruments based on their face validity, even though this approach has been shown to involve many difficulties when deriving scales for subjective dimensions such as self-esteem. An alternative approach to the measurement of self-esteem is based on techniques of psychophysical scaling and places respondents on their own subjective dimensions derived from judgments of trait self-descriptions. To test the technique, 35 college students, participating in groups of 10-15, judged similarity for 210 pair comparisons involving 20 traits plus the concept "yourself." Results indicated the weight vectors and person locations provided alternative ways for representing individual differences relative to the evaluative dimensions obtained from multidimensional scaling. Students generally placed more emphasis on the horizontal dimension than on the vertical dimension, and person locations were primarily on the evaluative side of the horizontal dimension. The location of individuals was not correlated with traditional measures of self-esteem. Charting coordinates for the self-concept in multidimensional trait space holds potential for producing a new measure of self-esteem. (JAC)

ED226297

CHARTING COORDINATES FOR THE SELF-CONCEPT
IN MULTIDIMENSIONAL TRAIT SPACE

Steven J. Breckler
Anthony G. Greenwald
Ohio State University

CG 016490

Paper presented at the Annual Conference of the American Psychological Association, Washington, DC, August 23-27, 1982.

Charting Coordinates for the Self-Concept in Multidimensional Trait Space*

Steven J. Breckler and Anthony G. Greenwald

Ohio State University

In this paper we present a new approach to the measurement of self-esteem. The traditional wa has been to construct instruments based on their face validity. Consider, for example, the following item from Janis and Field's scale: "Do you ever think you are a worthless individual?" Those who endorse the item are assumed to possess low self-esteem, whereas those who reject it a assumed to have a positive self-image. By summing over a variety of such items individuals are placed on a continuum of evaluative self-regard.

This "face validity" approach is one way to establish dimensions of individual variability. In the case of self-esteem, for example, it requires only that a test constructor designate item endorsements as reflecting either a positive or a negative self-image.

The "face validity" approach is not a good way to derive scales for subjective dimensions like self-esteem. Wylie (1974), in her book on the self-concept, has outlined the difficulties. One problem is in establishing dimensions of individual variability based on self-reports. What the experimenter interprets as inter-subject differences in self-reported location on a dimension may instead be differences in the meaning respondents assign to words or to statements being applied t different situations and reference groups. Interpretation of dimension intervals is also problematic since little may be known of respondents' own psychological metric.

We offer an alternative approach to the measurement of self-esteem -- one that is based on techniques of psychophysical scaling and that places respondents on their own subjective dimension

The dimensions are derived from judgments of trait self-descriptiveness. The use of trait ratings is, of course, very common in the assessment of personality characteristics. For instance, one well-known instrument -- the Adjective Check-List (Gough and Heilbrun, 1980) -- involves respondents checking those adjectives considered to be self-descriptive. The patterns of trait self-endorsements are then used to place the respondent on a variety of individual difference continua. For example, a face-valid measure of self-esteem can be defined as the total number of favorable traits checked. An alternative way is to use respondents' own cognitive representations of trait variability as the basis for deriving individual difference continua.

Determining the perceived dimensionality of traits has traditionally been the domain of research on implicit personality theory (cf. Schneider, 1973). That research has used multidimensional scaling techinques that provide spatial representations of perceived trait interrelationships. In multidimensional scaling (or MDS), subjects provide similarity ratings for all pair comparisons within a set of adjectives. From these ratings it is possible to derive a multidimensional trait space. For example, Rosenberg et al (1968) used MDS to scale 60 traits. They found that the major dimension of trait variability was an evaluative one, with traits distributed from Good to Bad.

---

*Paper presented at a symposium on Functioning and Measurement of Self-Esteem at the 90th annual meeting of the American Psychological Association, Washington, D.C., 1982. Address all correspondence regarding this report to: Steven J. Breckler, Department of Psychology, 404C West 17th Avenue, Columbus, OH, 43210.

A related multidimensional scaling technique is the Individual Differences (or INDSCAL) model developed by Carroll and Chang (1970). As with traditional MDS, INDSCAL can be used to obtain a multidimensional trait space. In addition, INDSCAL provides weights that represent the relative importance or salience of each dimension for each subject. The weights are one way to represent individual differences in perceived trait interrelationships. For instance, Sherman (1972) used the INDSCAL technique to analyze college students' similarity judgments for 20 traits. On the basis of this analysis, Sherman identified five groups or "clusters" of people, each cluster consisting of those who applied a different combination of importance to each of four trait dimensions. For example, one group of subjects placed most emphasis on the dimensions of "openness" and "commitment," which were characterized by traits like interesting and untrustworthy. Another group of subjects placed more emphasis on the dimension of "effectability," which was represented by traits like helpful and stubborn.

In addition to INDSCAL, we used a second scaling technique, multidimensional unfolding (Coombs, 1950; Bennett and Hays, 1960). Unfolding works by obtaining from each subject ratings of trait preference, and then placing subjects in a trait space so they are close to preferred traits and far from nonpreferred traits. In this study, we treated judgments of trait self-descriptiveness as "preferences" for traits, so that subjects would be located close to self-descriptive traits, and far from non-self-descriptive traits.

The INDSCAL and unfolding techniques are alternative methods for representing individual differences in perceived trait interrelationships. INDSCAL provides information regarding the relative importance or salience of dimensions that emerge from group data; the group space is, in effect, stretched differently for each subject. Unfolding, in contrast, locates each subject as a point in the trait space that is derived from group data.

Based on the Rosenberg et al study described before, we can predict that the major dimension of trait variability will be an evaluative one. Since unfolding will locate subjects on this dimension, it holds promise for producing a measure of self-esteem. The measure's validity rests on an assumption that there will be a single, shared structural representation of traits, even though individuals may be located at different places on the derived dimensions.

Method

Thirty-five subjects judged similarity for all 210 pair comparisons involving 20 traits[1] plus the concept "yourself." Subjects were undergraduates fulfilling a course requirement. They participated in groups of 10 to 15. The similarity judgments were made on a 9-point scale (from 1 = very similar to 9 = very dissimilar). The order of word pairs was the same for all subjects. After finishing the similarity ratings, subjects completed three personality scales. These were (1) The Rosenberg (1965) Self-Esteem scale; (2) The Janis-Field Self-Esteem scale (reprinted in Robinson and Shaver, 1973); and (3) The Public and Private Self-Consciousness scale (Fenigstein, Scheier and Buss, 1975).

Results

INDSCAL solution. The first step in the analysis was to obtain a multidimensional trait space based on subject's similarity judgments. This was done by using the SAS ALSCAL procedure (Barr, Goodnight, and Sall, 1979; Young and Lewyckyj, 1979) to derive a two-dimensional INDSCAL solution, which is displayed in Figure 1. The first dimension (horizontal in the Figure) is represented by traits varying from good to bad. For example, toward the left side of the dimension are traits like cold, arrogant, and phony; toward the right side of the dimension are traits like loving, helpful, and sympathetic. The second (or vertical) dimension is not as easily interpreted. It is characterized at the top by traits like brilliant, intelligent, and interesting. At the bottom are traits like immature, narrow-minded, and sympathetic.

Empirical Aids to Interpretation. Several empirically based analyses were conducted as an aid to interpreting the stimulus space. First, property vectors were oriented in the trait space. The vectors were based on a separate group of 40 subjects who rated each of the 20 traits on nine bipolar scales. In Table 1 are the nine scales along with direction cosines that orient a vector for each scale in the trait space. Also shown in the table is an R-squared value for each scale. These values represent the proportion of variance in the ratings that is accounted for by the traits when they are projected onto the scale's vector. It can be seen that the properties accounting for the greatest variability all involve evaluative characteristics (for example, good/bad, social good/bad, and intellectual good/bad). Furthermore, each of those vectors is oriented horizontally in the space. The three property vectors pictured in Figure 1 represent the major results from this analysis. All three vectors are oriented primarily along the horizontal plane. These vectors represent intellectual good to intellectual bad, passive to active, and hard to soft.

As an alternative approach to interpreting the stimulus space, trait coordinates from the INDSCAL solution were subjected to a clustering analysis. That analysis indicated that there were four clusters associated with this trait configuration (see Figure 1). In cluster I are the traits brilliant, intelligent, interesting, and witty. All of these traits are intellectually favorable. Cluster II is represented by happy, good-natured, considerate, helpful, and so on. These are also favorable traits, but they differ from those of Cluster I in reflecting a more socially oriented goodness. In cluster III are the traits immature, narrow-minded, stubborn, arrogant, and selfish. These are all unfavorable traits. Finally, cluster IV includes cold, untrustworthy, and phony. Again, these are unfavorable traits, but ones that are more socially oriented than those in Cluster III.

Individual Differences. To represent individual differences INDSCAL provides weights that represent the relative importance or salience of each dimension for each subject (see Figure 2). Graphically, we can represent the relative dimensional weights as a vector for each subject (MacCallum, 1977). Vectors with a small angle relative to the horizontal dimension indicate relatively more importance placed on that dimension than on the vertical dimension. Any subject vector with an angle less than 45 degrees would therefore indicate relatively more weight placed on dimension one than on dimension two. A vector of exactly 45 degrees, which is drawn in the figure for reference, indicates equal weights placed on the two dimensions. Examination of the weight vectors reveals that all subjects placed more weight on the horizontal dimension than on the vertical one. However, there was also individual variability; some subjects placed almost all of their weight on the horizontal dimension, while others placed nearly equal emphasis on the two dimensions.

Location of Individuals. The unfolding technique locates points in the multidimensional trait space that represent individual subjects. These person locations are indicated by stars in Figure 2. Examination of the Figure indicates that subject locations were scattered throughout the trait space. However, 71.4% of the subjects were located toward the favorable side of the horizontal dimension. By contrast, person locations were distributed evenly over the vertical dimension.

Interpretation of Person Space. The final step in the analysis was to interpret the person space. As described before, each subject responded to three personality questionnaires, including two measures of self-esteem. However, neither the person locations nor the dimensional weights fr INDSCAL were correlated with the personality measures.

Discussion

In summary, the weight vectors and the person locations provided alternative ways for representing individual differences relative to the evaluative dimensions obtained from multidimensional scaling. Analysis of the weight vectors indicated that subjects generally placed more emphasis on the horizontal dimension than on the vertical dimension. Similarly, person locations were primarily on the evaluative side of the horizontal dimension. The vector and point measures of individual differences are representations of affective self-regard. For example, we should expect subjects higher in self-esteem to be located more toward the evaluatively favorable portions of the trait space. However, the location of individuals was not correlated with the other traditional measures of self-esteem.

Despite the absence of correlations in the present study, we have auxiliary evidence that the measure is one of evaluative self-regard. In another study (Breckler, 1981) we obtained a one-dimensional unfolding solution based on a larger set of 120 traits. In that study, subject locations on an evaluative continuum were correlated with both Rosenberg self-esteem and Janis-Fie self-esteem.

We believe this approach to the measurement of affective self-regard is a fruitful one. First, the measure is less transparent than the traditional (and more face-valid) measures of self-esteem. This can reduce the potential for faked responses, for example respondents answering questions so a to present themselves in a socially desirable fashion.

A second advantage to this approach is that it locates individuals on trait dimensions that are derived from their own cognitive representations of trait variability, rather than on ones defined by the test constructor. This is useful since it allows us to observe the dimensions of trait variability that respondents utilize when making trait judgments.

Finally, we should note that the present efforts are not intended to add yet another measure of self-esteem to the multitude of already existing ones. Rather, we view this work as establishing a conceptual framework within which new measures may be constructed; measures that are derived on basis of psychophysical scaling techniques and that are sensitive to respondents' own cognitive representations of trait variability.

Future Directions. There are several future directions for this research. First, it will be useful to collect similar data for populations representing a wider range of self-esteem. We can then examine the derived spatial representation of traits to see if it is similar to the one obtained in the present study. Furthermore, respondents who are more evenly distributed over the entire range of the evaluative dimension will provide a better opportunity for assessing the measure's construct validity. Another direction is to relate the location of self in multidimensional trait space to cognitive processes associated with trait judgments. For example, Doug McCann and Breckler are looking at memory for trait terms as a function of each trait's distance from self in the trait space. In another study, Anthony Pratkanis and Breckler are investigating judgment latencies associated with trait self-descriptiveness judgments. If a trait's distance from self reflects its centrality to the self-concept, then we should observe an orderly relationship between judgment time and self/trait distance.

In summary, charting coordinates for the self-concept in multidimensional trait space holds potential for producing a new measure of self-esteem, and may help to set the concept of self-esteem in a useful context of other dimensions of individual variability.

Footnote

1. The 20 traits were taken from Sherman (1972).

References

Barr, A. J., Goodnight, J. H., & Sall, J. P. SAS User's Guide. Raleigh, N. C.: SAS Institute, 1979.

Bennett, J. G., & Hays, W. L. Multidimensional unfolding: Determining the dimensionality of ranked preference data. Psychometrika, 1960, 25, 27-43.

Breckler, S. J. Self-referent cognition and personality. Unpublished Master's Thesis, Ohio State University, 1981.

Carroll, J. D., & Chang, J. J. Analysis of individual differences in multidimensional scaling via an N-way generalization of "Ekart-Young" decomposition. Psychometrika, 1970, 35, 283-319.

Coombs, C. H. Psychological scaling without a unit of measurement. Psychological Review, 1950, 57, 145-158.

Fenigstein, A., Scheier, M. F., & Buss, A. H. Public and private self-consciousness: Assessment and theory. Journal of Consulting and Clinical Psychology, 1975, 43, 522-527.

Gough, H. G., & Heilbrun, A. B. The adjective check list manual. Palo Alto, CA: Consulting Psychologists Press, 1980.

MacCallum, R. C. Effects of conditionality on INDSCAL and ALSCAL weights. Psychometrika, 1977, 4, 297-305.

Robinson, J. P., & Shaver, P. R. Measures of social psychological attitudes. Ann Arbor, Michigan: Institute for Social Research, 1973.

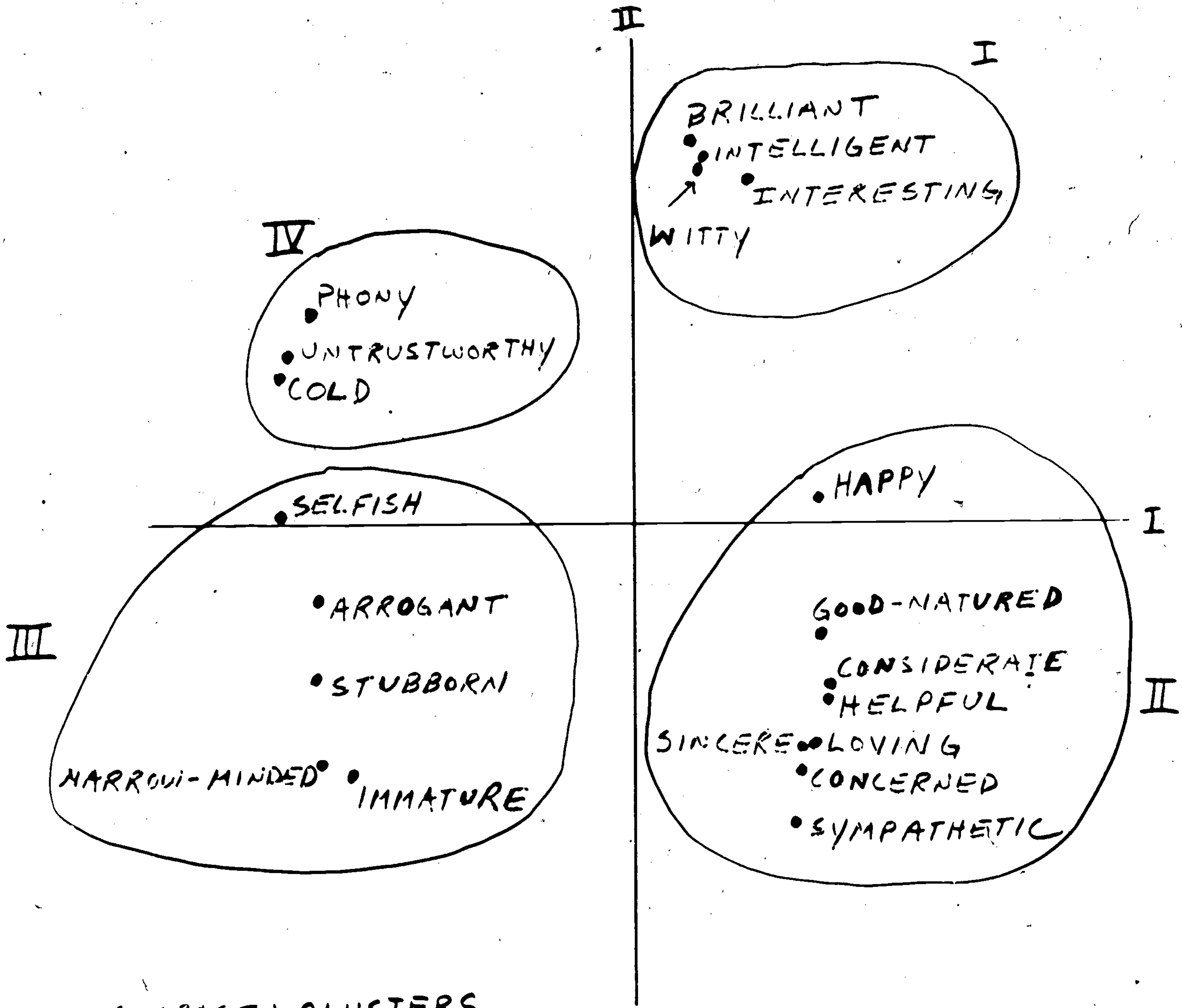
Rosenberg, M. Society and the adolescent self-image. Princeton, NJ: Princeton University Press, 1965.

Rosenberg, R., Nelson, C., & Vivekananthan, P. S. A multidimensional approach to the structure of personality impressions. Journal of Personality and Social Psychology, 1968, 9, 283-294.

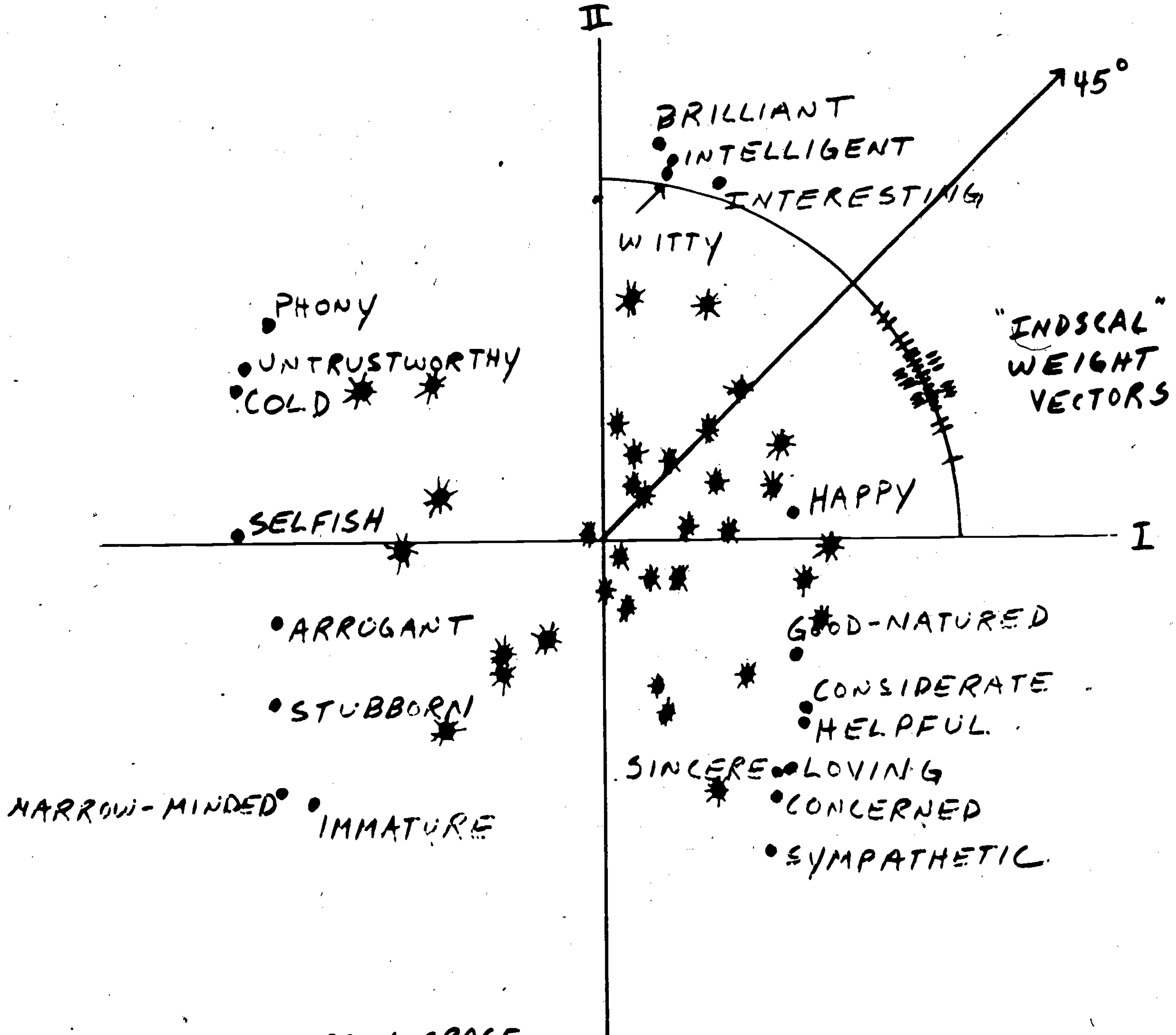
Schneider, D. J. Implicit personality theory: A review. Psychological Bulletin, 1973, 79, 294-309.

Sherman, R. C. Individual differences in perceived trait relationships as a funtion of dimensional salience. Multivariate Behavioral Research, 1972, 7, 109-129.

Young, F. W., & Lewyckyj, R. Alscal-4 user's guide. Chapel Hill, NC: Data Analysis and Theory Associates, 1979.



STIMULUS SPACE + CLUSTERS



STIMULUS SPACE + PERSON SPACE

BIPOLAR RATING SCALES

USED TO FIT PROPERTY VECTORS

Scale Endpoints	Direction Cosines		
	Dimension 1	Dimension 2	R^2
Good/Bad	.99	.09	.97
Social Good/Bad	.99	.08	.99
Intellectual Good/Bad	.98	.19	.95
Hard/Soft	.88	-.25	.89
Active/Passive	.78	.29	.65
Dominant/Submissive	.49	-.20	.30
Decided/Undecided	-.46	-.08	.21
Extroverted/Introverted	-.38	-.11	.16
Impulsive/Inhibited	.01	-.41	.17